



BANK ĊENTRALI TA' MALTA  
EUROSISTEMA  
CENTRAL BANK OF MALTA

## **A cohort approach to project the labour participation rate in Malta**

Abigail Marie Rapa<sup>1</sup>

Policy Note  
April 2019

---

<sup>1</sup> *Abigail Marie Rapa is an economist within the Economic Analysis Department of the Central Bank of Malta. She thanks Dr Aaron G. Grech, Alexander F. Demarco, Rita Schembri, Brian Micallef and Reuben Ellul for their helpful comments. The views expressed in this paper are those of the author and do not necessarily reflect those of the Central Bank of Malta. Any errors are the author's own.*

## **Abstract**

Since Malta's accession to the European Union, its labour market has undergone substantial shifts which have resulted in an increase in activity among the working age population. Using a cohort model of labour force participation this note assesses developments in the participation rate of males and females since 2000 and forecasts the overall participation rate for the medium term while taking gender and age-period-cohort factors into account. Using a dynamic cohort approach and under the assumption of no further policy change, the author estimates that the participation rate of those aged between 15 and 64 will continue to increase, reaching 80.4% in 2030. The continuous influx of foreign migrant workers and enacted pension reforms are estimated to boost the participation rate by 4.1 percentage points by 2030, which is equivalent to half of the projected increase in the participation rate.

**JEL Classification:** J11, J21, J26, F22

**Keywords:** Labour force participation; Cohort analysis; Ageing population; Pension reforms

# Table of Contents

<b>Abstract .....</b>	<b>1</b>
<b>Executive Summary .....</b>	<b>3</b>
<b>1. How has Malta’s participation rate changed over the recent years? .....</b>	<b>5</b>
<b>2. How do we expect the labour supply to change in the coming years?.....</b>	<b>9</b>
<i>2.1 Population Projections.....</i>	<i>10</i>
<i>2.2 Cohort participation rate projections .....</i>	<i>10</i>
<i>2.3 Participation Rate of the Working Age Population.....</i>	<i>14</i>
<b>3. What is the impact from a sustained influx of foreign workers and the pension reform on the participation rate? .....</b>	<b>16</b>
<b>References .....</b>	<b>19</b>

## Executive Summary

The structure of the labour market is a fundamental determinant of the country's ability to increase its long-run productivity and thus raise potential output. At the same time, the decision to participate in the labour market is determined by a number of socio economic factors whose relevance varies across age, gender and time. Analysing the behaviour of different age and gender groups is therefore essential for understanding what drives the overall participation rate, its likely future evolution and the implications for a country's potential output in the years ahead.

Over the past decade the Maltese labour market has undergone substantial changes which have varied significantly across different age-groups. For instance, factors such as structural reforms together with an increased influx of foreign workers have led to changes in the participation rates among younger and middle-aged groups as well as among females. Some policy measures, notably pension reforms, targeted specifically older workers. These developments have resulted in a higher overall participation rate, which in turn is estimated to have contributed an average of 0.8 percentage point per annum to potential output growth between 2008 and 2014.<sup>2</sup> When faced with such compositional shifts, analysing developments within the labour market at the cohort level becomes increasingly important to be able to better project population and participation rates in the medium term. In this light, this analysis will focus on movements in Malta's population and participation rates while looking at gender as well as age, period and cohort effects.

- **How has Malta's participation rate changed over recent years?**

Since Malta's accession to the European Union (EU), the Maltese labour market has experienced some significant shifts, reflected in a higher participation rate of the working age population. According to the Labour Force Survey (LFS), the activity rate of those aged between 15 and 64 has increased from a low of 57.6% in 2004 to an average of 72.2% in 2017. Over time, the gap with the euro area average has narrowed, although in 2017 at 73.1% the latter was still higher than the rate registered in Malta. These developments have been driven by a number of measures aimed at reaching the Europe 2020 target employment rate of 70% for those between 20 and 64 years old. While traditionally Malta's male participation rate stood above the euro area average, the female participation rate stood below the corresponding euro area average, resulting in a lower Maltese overall participation rate. In this regard, Government introduced a number of family-friendly measures and fiscal incentives which have successfully raised the activity rate among females and, consequently, the overall rate. The increased influx of foreign nationals, most of whom relocate to Malta for work purposes, has also affected the overall participation and employment rates in a positive way. The employment rate and activity rate for those aged between 20 and 64 years stood at 73% and 75.8%, respectively, in 2017, which is above Malta's Europe 2020 target.<sup>3</sup> Cohort data reveal that apart from significant increases in participation among most female cohorts, the participation rates of males aged 25 and over also increased, with the older cohorts rising significantly.

---

<sup>2</sup> Micallef, B., "Estimating the Impact of Structural Reforms on the Female Participation Rate", *Annual Report 2015*, Central Bank of Malta, pp. 53-58.

<sup>3</sup> The employment and activity rates of those aged between 15 and 64 stood at 69.2% and 72.2% respectively in 2017.

- **How do we expect the labour supply to change in the coming years?**

Gender, age, period and cohort effects are among the factors which shape developments in the aggregate participation rate. This study uses average entry and exit rates within a five-year cohort model in line with Carone (2005) to project LFS-consistent labour market participation rates over the medium run. Results show that Malta's working age population is expected to reach 342,941 by 2030, which is consistent with an average annual increase of 0.7%. This increase is solely driven by the influx of foreign nationals which is expected to offset the fall in the number of Maltese nationals of working age, thus mitigating labour market shortages. By the end of the forecast horizon, both male and female cohort participation rates are expected to exhibit patterns which are very close to those portrayed by the euro area average cohort participation rates. Similar to recent developments, both male and female participation rates of the younger groups are expected to continue to fall, while those of the older cohorts are expected to continue to increase as these are expected to remain within the labour market for a longer period. Furthermore, age-period-cohort effects are expected to gradually shift the participation of middle-aged females to higher levels helping to reduce the gap with the euro area average female participation rate. As a result, the overall LFS participation rate is expected to reach 80.4% in 2030, from 72.2% in 2017. The participation rate of the working age population within the euro area is expected to reach 74.4% in 2030 from 72.8% in 2017.<sup>4</sup> Malta's overall participation rate is expected to exceed the euro area average due to both an expected surge in the female participation rate, as well as an overall male participation rate which is expected to remain above the euro area average.

- **What is the impact from a sustained influx of foreign workers and pension reforms on the participation rate?**

The increased influx of foreign nationals and the recent implementation of pension reforms are two key factors that have affected, and are expected to continue to shape participation rate dynamics in Malta over the medium run. Thus, this study aims at quantifying the effects on labour participation that one may expect from the continued influx of foreign nationals and from the ongoing pension reform. In order to gauge the effect of these two factors, this study proposes two scenarios as alternatives to the baseline assumptions. In the first alternative scenario (Scenario 1), EUROPOP-2015 migration assumptions (which significantly underestimate the true extent of inward migration in recent years) are used instead of the estimates used in the baseline scenario. In the second scenario (Scenario 2), the study looks at a hypothetical situation in which the pension reform would not have taken place to extract the impact of the reform on the aggregate participation rate. This is done by applying the average rate of exit from the labour force during the four years pre-2013 for the cohort that includes those aged between 60 and 64. Results show that by 2030, the sustained influx of foreign nationals within the Maltese labour force is expected to add around 2.0 percentage points to the aggregate participation rate. The pension reform is estimated to boost the participation rate by a further 2.1 percentage points. Overall, these two factors explain half of the projected increase in the participation rate between 2017 and 2030.

---

<sup>4</sup> See The 2018 Ageing Report, European Commission, Institutional Paper no. 79, May 2018, Brussels

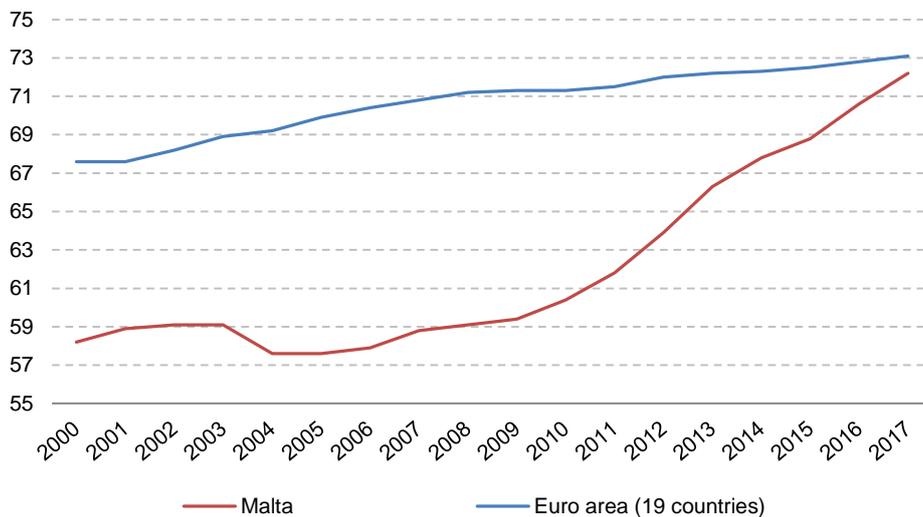
# 1. How has Malta's participation rate changed over the recent years?

One of the Europe 2020 targets for Malta is to achieve an employment rate of 70% among those aged between 20 and 64.<sup>5</sup> In this respect, the Maltese government has introduced a number of measures aimed at encouraging individuals of working age to enter the labour force or prolong their working life. Apart from being successful at increasing participation rates, these measures have also mitigated some of the negative effects of an ageing population.

The labour force participation rate (PR) is the share of the number of persons employed and unemployed (LS) in the total working age population (WAP).

$$PR_t = LS_t/WAP_t \quad (1)$$

**Chart 1: LFS labour force participation rate 15-64**  
(percentage of active population, annual averages)

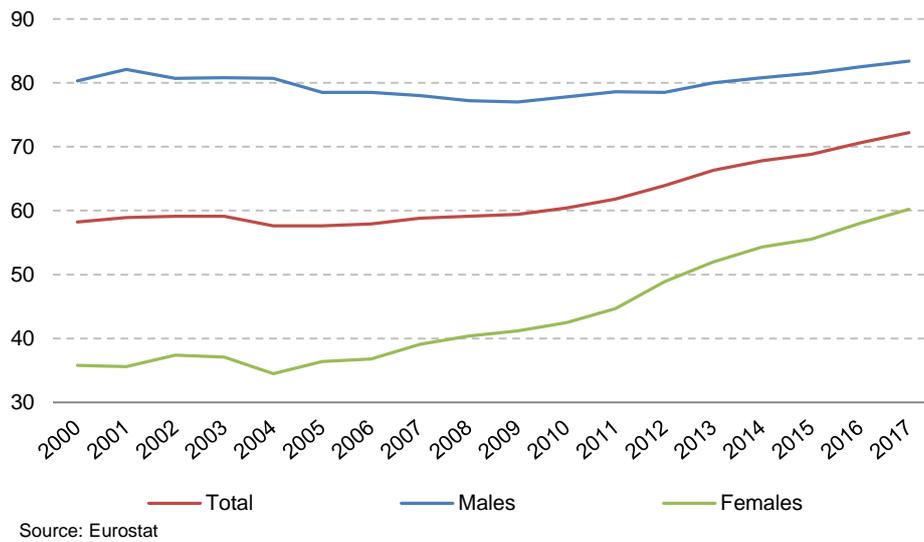


Source: Eurostat

LFS data show a strong increase in Malta's participation rate of those aged 15 to 64 since 2004. This rose from a low of 57.6% in 2004 to a high of 72.2% in 2017. Despite the recent strong increases, Malta's participation rate remains below the euro area average of 73.1% (see Chart 1). At the same time, the gap has narrowed considerably over time.

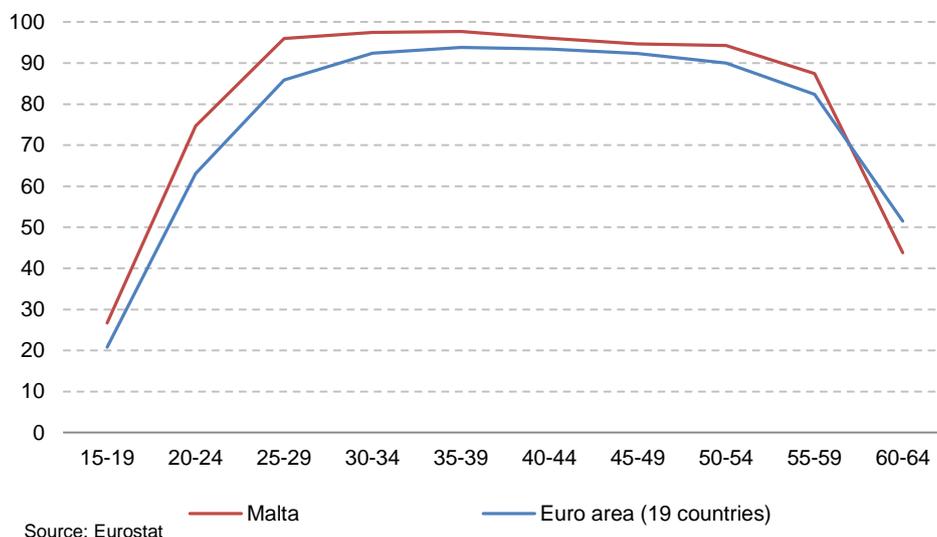
<sup>5</sup> See The National Employment Policy, Ministry for Education and Employment, May 2014, p.13 and Malta: National Reform Programme 2018, Ministry for Finance, April 2018, p.27.

**Chart 2: LFS labour force participation rate 15-64**  
(percentage of active population, annual averages)

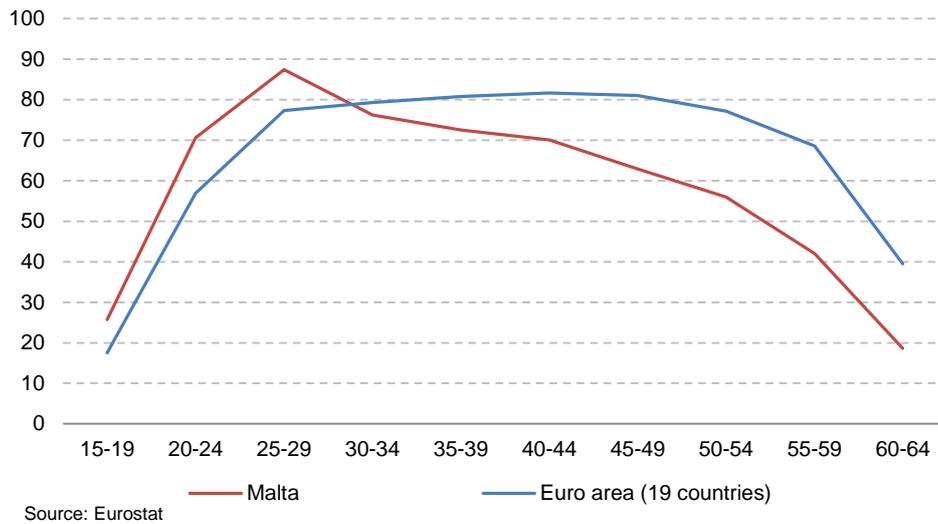


The main contributor to Malta’s low aggregate participation rate is the significantly low participation rate of females when compared to their male counterparts (see Chart 2). Furthermore, while Malta’s age-cohort profile for males is similar to that of the euro area, the age-cohort profile of the female participation rate differs significantly (see Charts 3 and 4). In particular, the participation rate for the cohorts holding 15 to 29 year olds is above that in the euro area for both males and females. However, the participation rates for women over 29 years of age, is still below the corresponding rates in the euro area as a whole. Female labour participation in Malta has been traditionally lower than that of men, due to a number of factors, including traditional gender roles particularly those related to the upbringing of children. In this respect, throughout the past decade, the Maltese government has introduced a number of family friendly measures aimed at helping females balancing work and family responsibilities and encouraging them to enter or re-enter the labour market. This effort succeeded to increase the female participation rate in Malta, from a low of 34.5% in 2004 to 60.2% in 2017 – an increase of 25.7 percentage points.

**Chart 3: Male LFS age-participation profiles for 2017**  
(percentage of active population, annual averages)

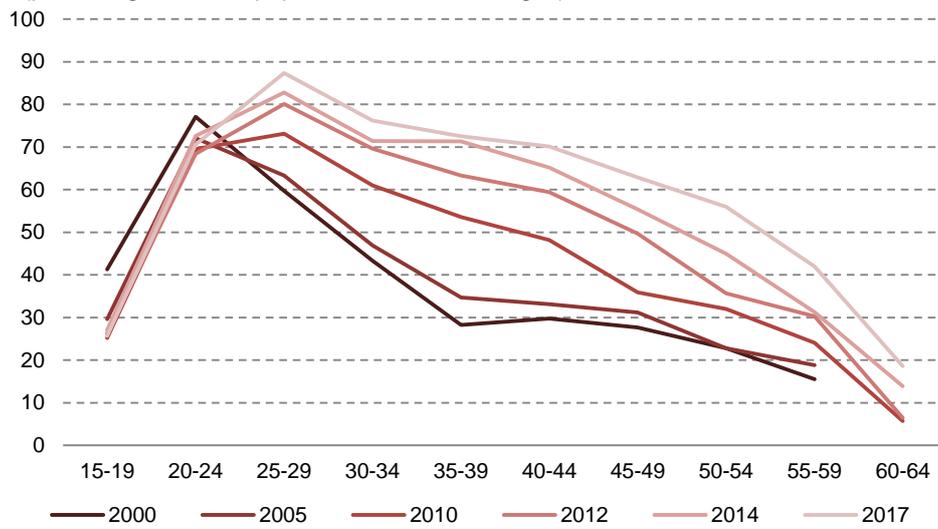


**Chart 4: Female LFS age-participation profiles for 2017**  
*(percentage of active population, annual averages)*



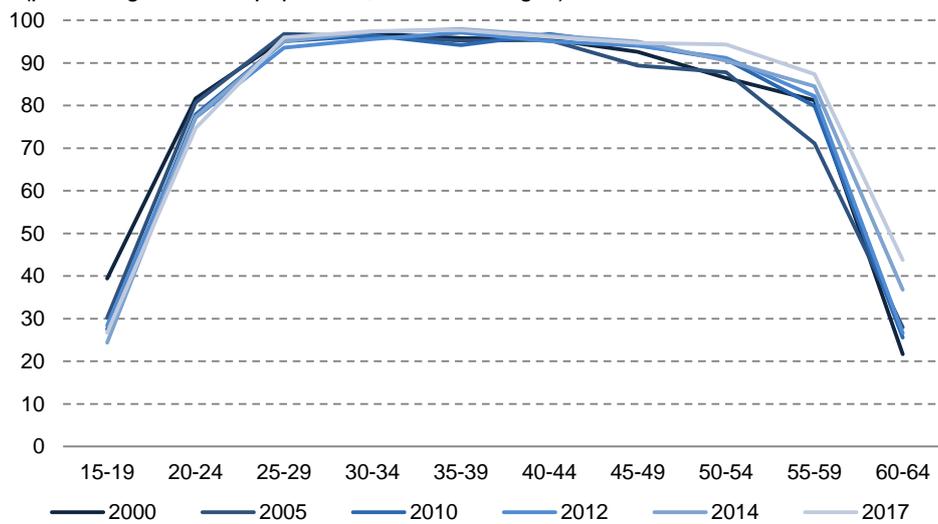
Data on age-cohort profiles over time indicate that the profile of age-cohort participation rates for males has been fairly stable over time, whereas that of females has changed significantly. Chart 5 shows the evolution of the female participation rate by cohort since 2000. One can note that the largest increases in female participation rates were registered among those aged between 35 and 44, most of whom have either joined or re-entered the labour market after child-bearing age. For instance, driven by a fall in the exit rates of females of child-bearing age, the participation rate of females aged between 35 and 39 has increased from 28.3% in 2000 to 72.5% in 2017. Despite such strong increases, at 60.2%, Malta's working age population female participation rate was still below the euro area average of 67.7% in 2017. This could be attributed to the level of education of the Maltese female labour force compared to the euro area average. Indeed, while the share of the females within working age population holding tertiary education has increased from 21.4% in 2005 to 31.9% in 2018 within the euro area, it has increased from a low of 10.7% to 27.5% in Malta largely driven by females aged between 25 and 49. While the catching up process is encouraging, a low education attainment level in the female population is not only likely to be one of the factors currently contributing to the low female participation rate but is also likely to shape the dynamics in female participation rates, especially in the middle-aged to older cohorts, in the years to come.

**Chart 5: Female LFS age-participation profiles**  
(percentage of active population, annual averages)



Source: Eurostat

**Chart 6: Male LFS age-participation profiles**  
(percentage of active population, annual averages)



Source: Eurostat

In general, one can also detect some decrease in the participation rate of the younger groups. In fact, the participation rate of females aged between 15 and 19 fell from 41.3% in 2000 to 25.7% in 2017, while that of males declined from 39.4% to 26.7% over the same period (see Charts 5 and 6). Though to a lesser extent, similar developments are observed among those aged between 20 and 24. Lower participation rates among younger cohorts are mainly attributed to higher education attainment levels. Indeed, the share of those aged between 20 and 24 who have obtained a tertiary level of education has increased from 7.1% in 2000 to 22.1% in 2017. On the other hand, recent increases in the participation rates among older age groups, particularly in the 60 to 64 age bracket reflect the pension reform which was launched in 2006 and implemented in 2013. Indeed, as shown above, the participation rates of this cohort have increased for both males and females since the introduction of the pension reform.

## 2. How do we expect the labour supply to change in the coming years?

Developments in the overall participation rate are driven by four factors; gender, age, period and cohort effects.<sup>6</sup> The gender effect reflects the fact that two individuals of the same age are born on the same date but differences in gender might lead them to have different preferences regarding labour participation. This might be due to exogenous factors such as cultural or traditional aspects or even endogenous factors related to the particular cohort and age of the individual (child-bearing age). Cohort, age and period effects are deeply intertwined and reflect that the preference of an individual to participate in the labour market depends on life-cycle decisions such as timing of education, caring for children and retirement (age effects), the particular years in which the individual is making such decisions (period effects) and sociological and cultural factors affecting specific age groups (cohort effects).<sup>7</sup> Therefore, an accurate estimate of future developments in the aggregate participation rate necessitates a proper treatment of these effects.

To this end, this study uses a five-year cohort model of participation rates based on Carone (2005) to project LFS-consistent aggregate participation rates from 2018 until 2030, while taking into account gender, age, period and cohort effects.<sup>8</sup> Given the five-year cohorts and a twelve-year forecast horizon, each cohort will therefore move through at least three age groups by 2030 as a result of the ageing factor.

The labour participation rate is extracted from the following identity which defines the labour supply of each cohort ( $LS_t^i$ ) as the product of the participation rate ( $PR_t^i$ ) and the population ( $POP_t^i$ ) of each cohort ( $i$ ).

$$LS_t^i = PR_t^i \times POP_t^i \quad (2)$$

This study projects participation rates in three steps. First, the Maltese working age population by five-year cohort is forecasted using a combination of official past demographic data and EUROPOP-2015 projections. Past demographic data on foreign nationals is then forecasted by using assumptions on foreign worker flows based on a combination of recent data on migration flows from the Jobsplus administrative employment register and EUROPOP-2015 flows. Second, cohort-specific participation rates are projected by applying the rates of exit and entry as appropriate, taking in consideration past patterns in gender and age-period-cohort characteristics. Finally, the overall participation rate is obtained by weighting cohort specific participation rates by their relative share in total population in each period.

---

<sup>6</sup> The age, period and cohort effects are perfectly linearly correlated making it impossible to disentangle between their separate effects on the participation rate without additional identification assumptions. While, the methodology employed in this study takes in consideration all three factors (together with gender effects), disentangling between the distinct effects of the age, period and cohort factors is beyond the scope of this study. For a discussion on the econometric techniques used in literature to disentangle age-period-cohort effects (known as the APC model), the reader is referred to Browning et al (2012).

<sup>7</sup> For instance, Malta's overall participation rate of the younger age cohort (15-19) has been falling since 2000, driven by higher education enrolment, while that of the older age cohort (60-64) has been on trending up due to the positive effects from the recent pension reforms.

<sup>8</sup> In this study we analyse and forecast the labour supply of the following five-year cohorts; 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59 and 60-64. Such cohorts are represented by the superscript  $i$  throughout the study.

## 2.1 Population Projections

In the baseline scenario, population projections for each five-year age cohort are based on both Eurostat's demographic projections of Maltese nationals and Central Bank assumptions on flows of foreign nationals. EUROPOP-2015 projections are prepared by Eurostat in collaboration with the NSO and are based on fertility, mortality and migration assumptions. This study, projects demographic statistics of Maltese nationals by imposing the growth rate of Maltese-born individuals (thus excluding migrants) found in the latest EUROPOP release (EUROPOP-2015) on the demographic statistics published by NSO.<sup>9</sup> The latter are in turn based on records held by the Public Registry and the Directorate of Health Information and Research.

Since Malta's accession to the EU, its labour market has been characterised by a substantial inflow of foreign workers. As EUROPOP-2015 underestimates the net flow of foreign nationals within the Maltese population, this study forecasts the demographic population of foreigners residing in Malta separately, by taking into account actual flows recorded by Jobsplus. These flows drop to the net flow forecasted by EUROPOP-2015 from 2025 onwards. A projected estimate of the total working age population based on demographics data is then derived by adding the projections for Maltese nationals with those of foreign nationals.

Since the aim of this analysis is to forecast the LFS participation rate, the projection for the overall demographic population needs to be converted into an LFS-consistent measure of the working age population. This is achieved by applying the forecasted annual growth rates of each five-year cohort in the demographic population to the corresponding LFS cohort.<sup>10</sup>

According to the LFS, Malta's working age population has increased substantially since 2013 reaching 313,200 in 2017 from 287,300. In line with EUROPOP-2015 projections and taking in consideration the latest flows for foreign workers residing in Malta, the LFS population of those aged between 15 and 64 is expected to reach 342,941 in 2030, an average annual increase of 0.7%. This is mainly attributed to the expected influx of foreigners. Indeed, given the decreasing fertility rates among Maltese nationals, the working age population of Maltese nationals is expected to continue to fall over the forecast horizon. This decline is expected to continue to be outweighed by the influx of foreign nationals, resulting in a continued growth in Malta's overall population.

## 2.2 Cohort participation rate projections

In order to take into consideration gender and age-period-cohort effects, the projections of the cohort participation rates are based on the method used by Carone (2005), which applies recent gender-specific participation entry and exit rates to past participation rates.<sup>11,12</sup> This methodology takes into account the number of persons within a particular

---

<sup>9</sup> Demographics data include recent revisions published by NSO in NR022/2018.

<sup>10</sup> Year-on-year growth rates of the two series are highly correlated with a correlation coefficient of 0.74 for the period 2000-2017.

<sup>11</sup> Carone (2005) bases his methodology on the dynamic version of the Latuippe (1996) methodology, developed by Sherer (2003).

<sup>12</sup> Whereas Carone (2005) forecasts the participation rate using each year of age, this study forecasts the activity rates using five-year age groups for both males and females between 2018 and 2030.

cohort who are expected to be part of the labour market in the following period (in this case, in the next five years) by estimating entry and exit rates for each cohort ( $i$ ). The rate of entry ( $Ren$ ) is estimated by dividing the number of persons expected to become active between age group  $i$  and  $(i + 1)$  ( $NLS$ ) by the number of inactive persons in the previous period. The latter is the difference between the population ( $Pop$ ) and the number of people who are already participating in the labour market ( $LS$ ).

$$Ren = \frac{NLS_{t+5}^{i+1}}{Pop_t^i - LS_t^i}$$

The exit rate ( $Rex$ ) is calculated by subtracting the ratio of the participation rate of a cohort to that of the adjacent cohort five-years before from unity as shown below.<sup>13</sup>

$$Rex = 1 - \frac{Pr_{t+5}^{i+1}}{Pr_t^i}$$

The rate of entry is used in the case of cohorts whose participation rate increases when compared to the rate of the previous cohort five-years before. On the other hand, the rate of exit is applied to those cohorts whose participation rate is lower than that of the previous cohort five years earlier.<sup>14</sup>

By applying these rates to the projected number of persons in each age bracket, it is then possible to obtain the participation rate of each cohort. Apart from taking into account the age effects, this dynamic cohort methodology takes into account the development of labour market participation among different generations. The importance of age-period-cohort effects can be mostly observed in the profiles of both past and projected female participation rates.<sup>15</sup>

Projections presented in Carone (2005) are based on fixed entry and exit rates calculated as the average of the rates between 1997 and 2003. Given the substantial shifts within the Maltese labour market over the very recent years, this study largely applies the average rates between 2014 and 2017 for most cohorts. However, the same author points out that using averages of recent rates is somewhat restrictive since it does not take into account the catching-up of female participation rates. In this light, this study uses the 2014-2017 average entry and exit rates selectively.

To better account for the catching up effect of the female participation rate, the female participation rates of the 20-24 and 25-29 cohorts were forecasted using the trend of the respective rates of entry estimated between 2005 and 2017. Since the female participation rate of the 30 to 34 cohort tends to be lower than that of the previous cohort in the previous period, the participation rate of this cohort was projected using the average rate of exit rather than the average rate of entry. Constant four year average rates of entry were assumed for the cohorts holding 35 to 59 year olds, in an effort to account for the fact that the

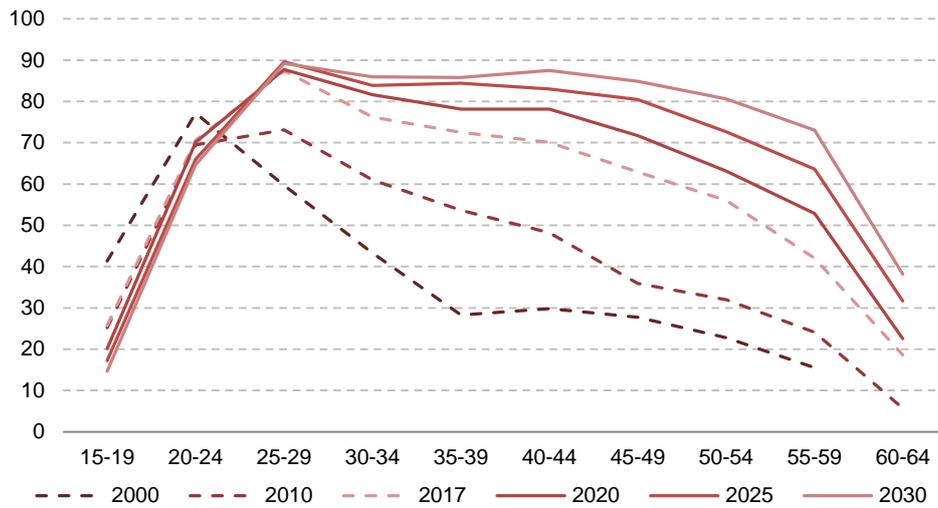
<sup>13</sup> Alternatively, the rate of exit is calculated by dividing the number of persons expected to become inactive by the current labour force;  $Rex = \frac{OLS_{t+5}^i}{LS_t^i}$

<sup>14</sup> Since our study is based on five-year cohorts, I apply the entry and exit rates in five-year intervals. For instance, in order to forecast the participation rate of the 35-39 age group in 2018 I apply the rate of entry of this cohort to the participation rate of the 30-34 age group in 2013.

<sup>15</sup> Such effects are also observed in Carone (2005) for females in Belgium, Germany, France and Italy as well as in Australian Productivity Commission (2005) in Australia.

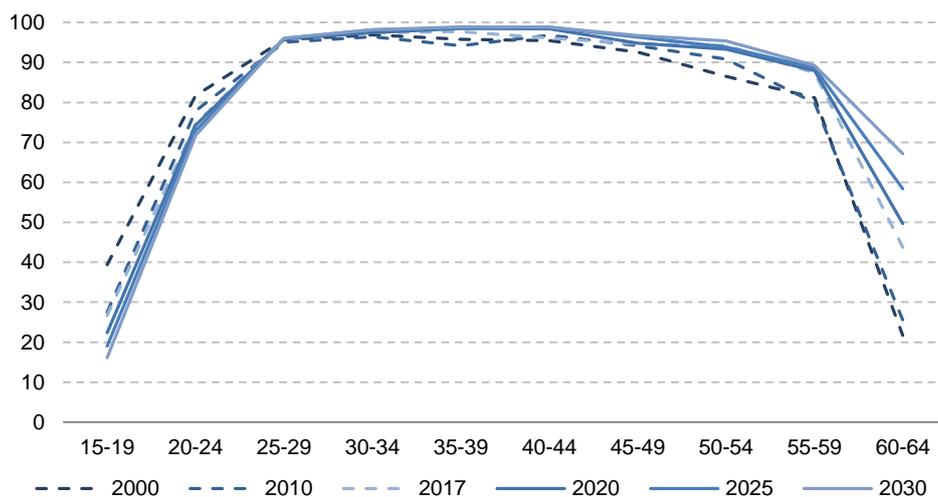
participation rates of these age brackets tend to be higher than that of the previous cohort in the previous period. As individuals approach the statutory retirement age, their participation rate tends to decline, mostly as a result of early retirement. Therefore, the female participation rate of those aged between 60 and 64 was forecasted using the average rate of exit. Moreover, in recent years female cohort participation rates have been significantly affected by a larger than average flow of foreign nationals. In this regard, and given our assumption of lower migrant flows from 2025 onwards, this study largely applies the average rates of entry and exit of the four years prior to 2013 for females from 2025 onwards.

**Chart 7: Female age-participation profiles**  
(percentage of active population, annual averages)



Source: Eurostat, Author's calculations

**Chart 8: Male age-participation profiles**  
(percentage of active population, annual averages)

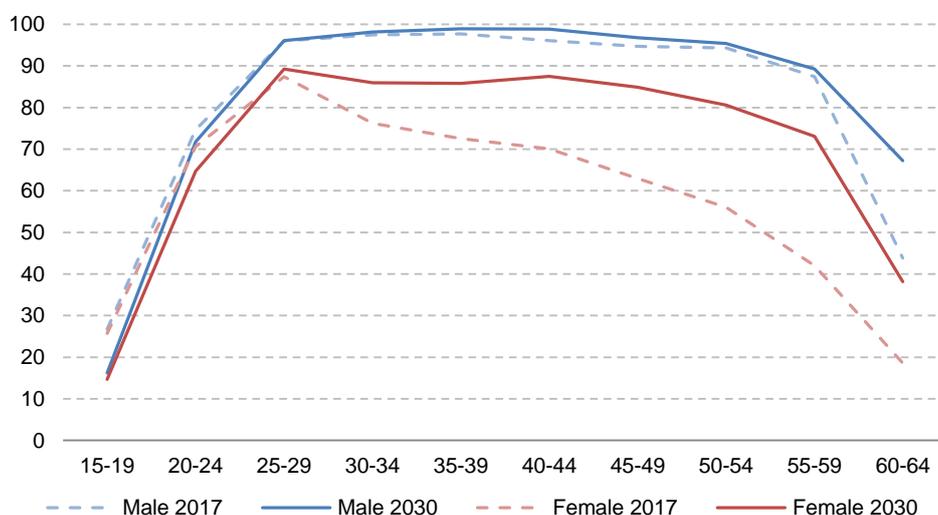


Source: Eurostat, Author's calculations

The male participation rates for individuals aged between 20 and 44 were projected using the four-year average rate of entry between 2013 and 2017, while those covering the ages between 45 and 59 were forecasted using their respective four-year rate of exit. Since the recent pension reform has shifted up the participation rate of males aged between 60 and 64, future developments in the participation rate of this cohort were estimated by extending the declining trend of the rate of exit estimated for the period 2005-2017, to allow for the decreasing recourse to large-scale early retirement schemes in the last two decades.

Results for the projected age-cohort profiles for both males and females are shown in Charts 7 and 8. Using the dynamic cohort approach and under the assumption of no further policy changes<sup>16</sup>, one can note that the participation rate profiles of both males and females start to exhibit patterns similar to those of euro area participation rates. As in recent years, both male and female participation rates of the first two cohorts are expected to continue to decline in the forecast horizon, mainly driven by a higher proportion of people aged between 15 and 29 who seek higher education attainment levels. Driven mainly by the recent pension reform, activity among the older male cohort is expected to continue to increase. Older females are also expected to experience this effect given that the pension reform applies to both genders. However, age-period-cohort effects are also relevant in this case, as they are expected to gradually shift the participation of middle-aged females to higher levels. Also, the age-cohort profile of the female participation rate is expected to gradually become closer in shape to that of males implying a continued catching up process over the forecast horizon (see Chart 9).

**Chart 9: Participation rate by cohort**  
(percentage)

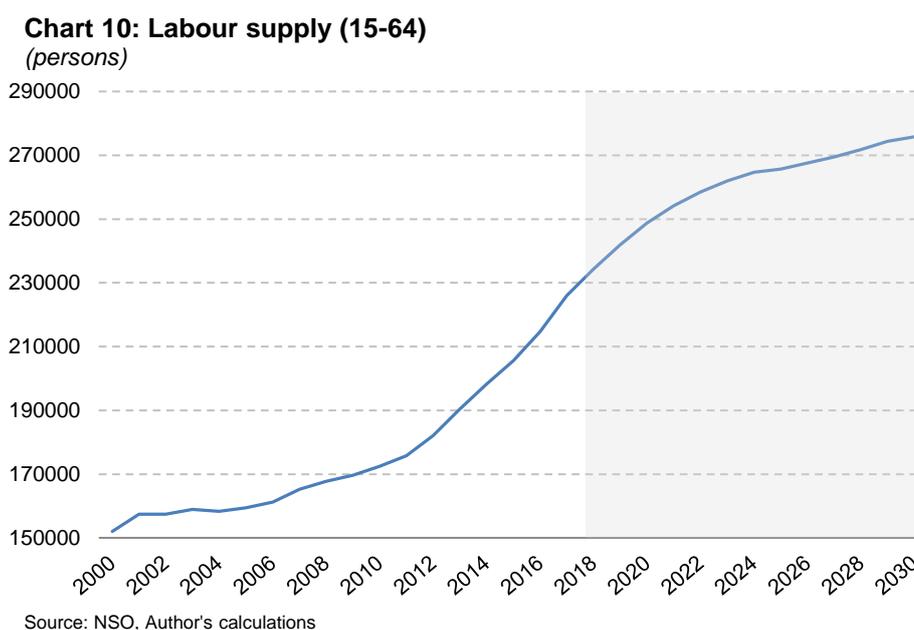


Source: Author's calculations

<sup>16</sup> Except for the pension reform changes to be implemented between 2018 and 2026 which are being internalized by the trend in the exit rates used to forecast the participation rates of the cohorts affected by this policy.

### 2.3 Participation Rate of the Working Age Population

Aggregating the above results yields an LFS-consistent participation rate of 80.4% in 2030, up from 72.2% in 2017. As shown in Chart 10 below, the labour supply is expected to rise throughout the forecast horizon, resulting in an increased overall participation rate. This increase is attributable to two factors. First, since foreign nationals have higher participation rates when compared to Maltese nationals, the inflow of foreign workers projected in the forecast horizon is expected to increase both the male and female participation rates. Secondly, the increase in the overall participation rate is continuous due to a persistent increase in the female participation rate driven by the continuous implementation of family friendly measures.



Indeed, looking at the disaggregation of the working age participation rate by gender we note that the female participation rate is expected to register the larger increase (see Table 1). This is expected to rise from 60.2% in 2017 to 74.0%, mainly driven by developments in the 35-59 cohorts. The participation rate of males is also expected to increase, though by a significantly smaller magnitude. Despite the fact that Malta's male participation rate has traditionally been higher than its euro area counterpart, it is still expected to edge up from 83.4% in 2017 to around 86.5% by 2030, mainly driven by developments among older cohorts.

**Table 1**  
**PARTICIPATION RATE BY GENDER BASED ON LFS <sup>(1)</sup>**  
*Percent of total working age population*

	Total	Male	Female
2000	58.2	80.3	35.8
2001-2005 <sup>(2)</sup>	58.5	80.6	36.2
2006-2010 <sup>(2)</sup>	59.1	77.7	40.0
2011-2015 <sup>(2)</sup>	65.7	79.9	51.1
2017	72.2	83.4	60.2
<b>2018</b>	<b>73.2</b>	<b>83.6</b>	<b>62.0</b>
<b>2019</b>	<b>74.3</b>	<b>84.0</b>	<b>64.0</b>
<b>2020</b>	<b>75.3</b>	<b>84.6</b>	<b>65.5</b>
<b>2021</b>	<b>76.2</b>	<b>84.9</b>	<b>66.8</b>
<b>2022</b>	<b>77.0</b>	<b>85.4</b>	<b>68.0</b>
<b>2023</b>	<b>77.7</b>	<b>85.5</b>	<b>69.3</b>
<b>2024</b>	<b>78.3</b>	<b>85.7</b>	<b>70.5</b>
<b>2025</b>	<b>78.6</b>	<b>85.9</b>	<b>70.8</b>
<b>2026</b>	<b>79.0</b>	<b>86.0</b>	<b>71.5</b>
<b>2027</b>	<b>79.3</b>	<b>86.3</b>	<b>72.0</b>
<b>2028</b>	<b>79.8</b>	<b>86.4</b>	<b>72.9</b>
<b>2029</b>	<b>80.3</b>	<b>86.5</b>	<b>73.8</b>
<b>2030</b>	<b>80.4</b>	<b>86.5</b>	<b>74.0</b>

<sup>(1)</sup> forecasted figures are shown in bold

<sup>(2)</sup> five year averages

Source: Eurostat, Author's calculations.

### **3. What is the impact from a sustained influx of foreign workers and the pension reform on the participation rate?**

The implementation of the recent pension reform and the sustained influx of foreign workers in the Maltese labour market are two factors that are heavily shaping up developments in both male and female participation rates. Since Malta's EU accession in 2004, the Maltese labour market has become ever more affected by the influx of foreigners. Since most foreign nationals who moved to Malta in recent years did so to seek employment, these developments have also led to an increase in the overall participation rate. Moreover, the recent pension reform has resulted in significantly higher participation rates among the older age cohorts, serving as another push factor for the participation rate. This section aims to quantify the extent to which these two developments are expected to affect Malta's aggregate participation rate.

Whereas, demographic statistics indicate that foreign nationals within the Maltese population have increased by an average of 8,283 in the three years to 2017, the EUROPOP-2015 population projections suggest a flow of 2,747 in 2016 which declines to 2,267 in 2030. In light of the apparent underestimation of the population of foreign nationals within EUROPOP-2015 data, the baseline scenario estimate for foreigners uses alternative assumptions that take into account the latest demographic and administrative flows data. The baseline scenario assumes that the projected number of foreign workers residing in Malta will continue to increase over the forecast horizon, with an average net flow of 4,122 persons over the period 2018-2030, which compares with an average of 2,401 in EUROPOP-2015. The net flow used in the baseline drops to the net flow forecasted by EUROPOP-2015 from 2025 onwards. In order to gauge the sensitivity of the results to the assumptions underpinning the baseline scenario, the participation rates derived in the previous section are re-estimated using the flows of EUROPOP-2015 migration projections (Scenario 1).

Scenario 2 estimates the impact of Malta's pension reform on the aggregate participation rate, driven by developments in the participation rates of the older cohort. The pension reform introduced in 2012 has raised the pension age to 62 for individuals born between 1952 and 1955, to 63 for those born between 1956 and 1958, 64 for persons born between 1959 and 1961 and to 65 for those born from 1962 onwards.<sup>17</sup> This implies that the first effects from the pension reform were registered in 2013, with the final rise in pension age taking place in 2026. In order to estimate the effect of the pension reform on the overall participation rate, Scenario 2 uses the average rate of exit calculated over the period 2009 - 2012 for the 60 - 64 age bracket instead of the average rate of exit estimated for the period 2014 to 2017. The results are shown in Chart 11 and Chart 12.

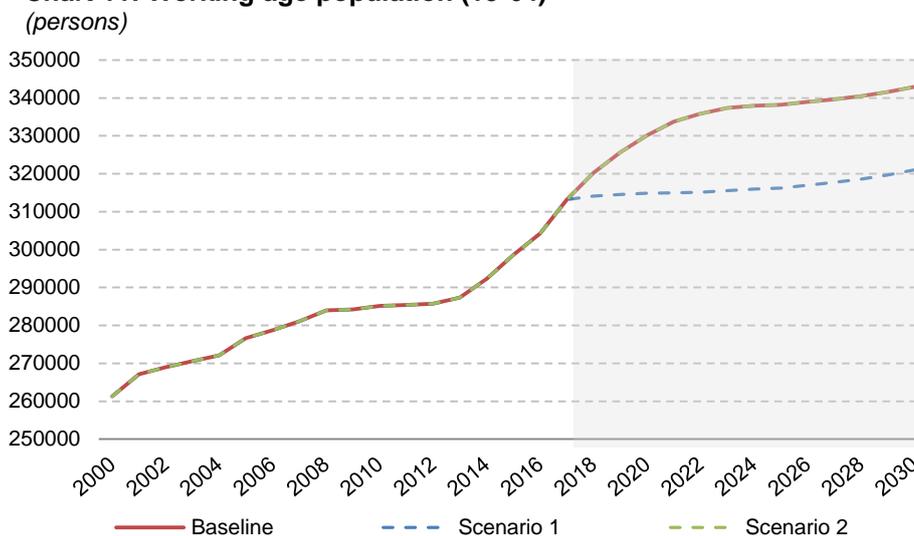
Chart 11 shows that EUROPOP-2015 inward migration estimates are consistent with a significantly lower working age population when compared to the baseline forecasts. The difference between the two series represents the cumulative difference between the flow estimates used in the baseline scenario and those predicted by EUROPOP-2015, confirming that the projected net inflow of foreign nationals is a substantial driver behind working-age population growth in Malta. Although the baseline working age population exceeds that

---

<sup>17</sup> For further analysis on the effects of the pension reform on the Maltese economy, refer to Grech A. (2016) "The Possible Impact of Pension Age Changes on Malta's Potential Output", *Central Bank of Malta Policy Note*.

consistent with Scenario 1 by a wide margin, this partly reflects the fact that, according to the LFS the number of foreigners in Malta in 2017 (48,900) already exceeds the EUROPOP-2015 projection for that year (8,823) substantially. Furthermore, data for the first nine months of 2018 show a similar trajectory to the baseline figures suggesting that the assumption of foreign national migration flows used in the baseline scenario are up till now being supported by the data.

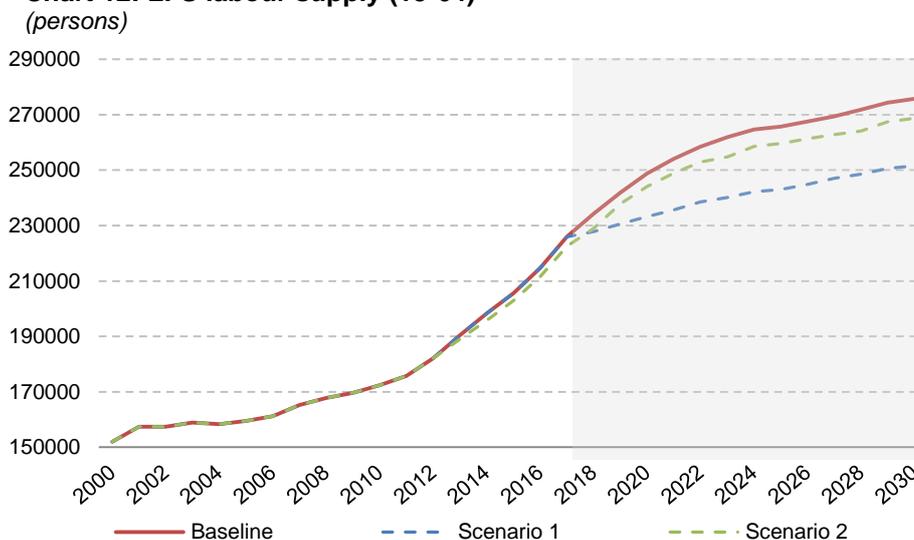
**Chart 11: Working age population (15-64)**



Source: Eurostat, Author's calculations

Since foreign nationals tend to have a higher participation rate than Maltese nationals, the lower working age population level in Scenario 1 implies an almost equivalent difference in the forecasted labour supply, and a lower forecasted participation rate of 78.4% in 2030, compared to 80.4% in the baseline (see Charts 11 and 12). The initial impact of higher migrant flows on the participation rate is estimated at around 0.7 percentage point in 2018 (see Table 2). The impact reaches 2.0 percentage points by the end of the forecast horizon. The contribution of a continued influx of foreign nationals within the Maltese labour force affects both the male and female participation rates.

**Chart 12: LFS labour supply (15-64)**



Source: Eurostat, Author's calculations

**Table 2**  
**PARTICIPATION RATE BASED ON LFS<sup>1</sup>**

*Percent of total working age population*

	Baseline	Scenario 1	Scenario 2
2000	58.2	58.2	58.2
2001-2005 <sup>(2)</sup>	58.5	58.5	58.5
2006-2010 <sup>(2)</sup>	59.1	59.1	59.1
2011	61.8	61.8	61.8
2012	63.9	63.9	63.9
2013	66.3	66.3	<b>65.8</b>
2014	67.8	67.8	<b>67.0</b>
2015	68.8	68.8	<b>68.0</b>
2016	70.6	70.6	<b>69.5</b>
2017	72.2	72.2	<b>71.1</b>
2018	<b>73.2</b>	<b>72.5</b>	<b>72.0</b>
2019	<b>74.3</b>	<b>73.3</b>	<b>73.0</b>
2020	<b>75.3</b>	<b>74.1</b>	<b>73.9</b>
2021	<b>76.2</b>	<b>74.8</b>	<b>74.6</b>
2022	<b>77.0</b>	<b>75.7</b>	<b>75.3</b>
2023	<b>77.7</b>	<b>76.1</b>	<b>75.9</b>
2024	<b>78.3</b>	<b>76.7</b>	<b>76.5</b>
2025	<b>78.6</b>	<b>76.8</b>	<b>76.8</b>
2026	<b>79.0</b>	<b>77.2</b>	<b>77.1</b>
2027	<b>79.3</b>	<b>77.8</b>	<b>77.4</b>
2028	<b>79.8</b>	<b>78.0</b>	<b>77.8</b>
2029	<b>80.3</b>	<b>78.4</b>	<b>78.3</b>
2030	<b>80.4</b>	<b>78.4</b>	<b>78.3</b>

<sup>(1)</sup> forecasted figures are shown in bold

<sup>(2)</sup> five year averages

Source: Eurostat, Author's calculations.

As regards the pension reform (Scenario 2), this has no impact on the working age population, as individuals affected by the pension reform are included in the working age population by construction. As the pension reform started to have an effect in 2013, the labour supply is affected already in that year. As shown in Chart 12, the introduction of the pension reform is estimated to have a more muted effect on the labour supply compared with the sustained influx of foreign workers. On the other hand, its effect on the aggregate participation rate is estimated to be almost equivalent to that attributed to the sustained influx of foreign workers by the end of the forecast horizon (see Table 2). As soon as the pension reform was introduced, it immediately boosted the participation rate by 0.5 percentage point in 2013. This impact increases to 2.1 percentage points by the end of our forecast horizon. The impact of the pension reforms on the aggregate participation rate is mainly visible in the male component. Indeed by 2030, under the no pension reform scenario, the participation rate of males is expected to be around 2.6 percentage points lower than that in the baseline scenario, while the participation rate of females is estimated to be only around 1.5 percentage points lower than in the baseline.

Thus this analysis indicates that half of the forecasted increase in the participation rate between 2018 and 2030 can be attributed to the sustained influx of foreign nationals and the pension reform. The remaining increase reflects cultural changes and the unfolding effects of other recent reforms aimed at increasing activity, whose effect has not been quantified in this study.

## References

- Australian Productivity Commission (2005) "Economic Implications of an Ageing Australia". *Productivity Commission Research Report*, Canberra, Australia.
- Browning, Martin, Crawford, Ian and Knoef, Marike (2012) "The Age-Period-Cohort Problem: Set Identification and Point Identification". *CeMMAP working papers*, CWP02/12.
- Carone, Giuseppe (2005) "Long-term labour force projections for the 25 EU Member States: A set of data for assessing the economic impact of ageing". *European Commission Economic Paper*, No. 235.
- European Commission (2018) "The 2018 Ageing Report". *European Commission Institutional Paper*, No. 79.
- Grech, Aaron (2016) "The Possible Impact of Pension Age Changes on Malta's Potential Output", *Policy Note April 2016*, Central Bank of Malta.
- Latulippe, Denis (1996) "Effective retirement age and the duration of retirement in the industrial countries between 1950 and 1990". *Financing and Economics, Social Security Department, International Labour Office*, Geneva.
- Micallef, Brian (2015) "Estimating the Impact of Structural Reforms on the Female Participation Rate". *Annual Report 2015*, Central Bank of Malta.
- Ministry for Education and Employment (2014) Malta: The National Employment Policy.
- Ministry for Finance (2018) Malta: National Reform Programme 2018.
- Sherer, Peter (2002) "Age of Withdrawal from the Labour Force in OECD Countries". *OECD Labour Market and Social Policy Occasional Papers*, No. 49, OECD Publishing, Paris.